

REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

The specification and abstract have been reviewed and revised to make editorial changes thereto and generally improve the form thereof, and a substitute specification and abstract are provided. No new matter has been added by the substitute specification and abstract.

By the current Amendment, claims 1-19 have been cancelled and claims 20-50 have been added.

The instant invention pertains to a polishing apparatus for polishing a workpiece. The polishing apparatus includes a polishing table having a polishing surface, a top ring for pressing a workpiece against the polishing surface, and a dresser for dressing the polishing surface. Such a polishing apparatus is generally known in the art but suffers from drawbacks as discussed on pages 1-6 of the original specification.

Applicants have addressed and resolved these drawbacks by including at least two dressers in combination with a polishing table and a top ring. The dressers are designed to perform dressing operations at different times. By having the dressers perform dressing operations at different times, a more versatile polishing apparatus is provided. Independent claims 20, 30, 32, 33 and 34 are believed to be representative of Applicants' invention.

Claims 1 and 2 were rejected under 35 U.S.C. § 102(b) as being anticipated by Berman. Claims 1-3 and 13-16 were rejected under 35 U.S.C. § 102(b) as being anticipated by Tanaka. Claims 7-10 and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by JP '618. Claims 1, 2, 18 and 19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Hayakawa et al. Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '618 in view of JP '504. And, claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayakawa et al. in view of WO '024. These rejections are respectfully traversed in part and the references relied upon by the Examiner are not applicable with regard to the newly added claims for the following reasons.

As alluded to previously, the inventive concept of the instant invention pertains to providing at least two dressers that are to perform dressing operations at different times, respectively. This feature is believed to be brought out in each of the independent claims.

In this regard, claim 20 recites

a polishing surface... at least two dressing units... to dress said polishing surface at different times,

claim 30 recites a polishing apparatus comprising

a polishing surface... a first dresser for dressing said polishing surface while the workpiece is being polished... and... a second dresser for dressing said polishing surface while the workpiece is not being polished,

claim 32 recites a polishing apparatus comprising

a first dresser... a second dresser... wherein said first dresser and said second dresser are to perform said first dressing operation and said second dressing operation at different times, respectively,

claim 33 recites a polishing apparatus comprising

a first dresser... a second dresser... wherein said first dresser and said second dresser are to perform said first dressing operation and said second dressing operation at different times, respectively, and

claim 34 recites a polishing apparatus comprising

a polishing surface... at least two dressers... wherein one of said at least said dressers is to perform an initial surface conditioning of said polishing surface prior to polishing of any workpiece... and another of said at least two dressers is for dressing said polishing surface after the workpiece has been polished.

Accordingly, each of independent claims 20, 30, 32, 33 and 34 are believed to adequately bring out the feature of providing two dressers that are to perform dressing operations at different times with respect to one another. This feature is lacking from any of the references relied upon by the Examiner.

In this regard, Berman discloses in a first embodiment a pre-conditioner having a conditioning head 128 for conditioning a polishing pad 112, and a pre-conditioning head 130 for pre-conditioning the polishing pad 112. The Examiner has apparently equated one of heads 128 and 130 with a first dresser and the other of these heads with a second dresser. The pre-conditioning is to negate problems associated with a "first-wafer effect", as described in column 2, lines 19-65. As expressed in column 7, lines 23-57 of Berman, a pre-conditioning film mounted on head 130 is generally of the same material as that of a film on a workpiece to be polished. Thus, the effect that pre-conditioning head 130 has on a polishing surface is similar to the effect that a workpiece being polished has on the polishing surface, and accordingly, it is respectfully submitted that the pre-conditioning performed by pre-conditioning head 130 is **not** a "dressing" operation as is generally understood in the art. Accordingly, pre-conditioning head 130 is **not** a dresser.

Similarly, in the embodiment shown in Fig. 3B, preconditioning films 228 and 230 are provided such that neither of the members on which these films are provided performs a "dressing" operation as is generally understood in the art, but rather merely has an effect on the polishing surface that is similar to the effect that a workpiece being polished has on a polishing surface. Accordingly, neither of the members supporting films 228 and 230 are dressers.

Thus, Berman discloses only a single dresser, i.e. head 128 as shown in the first embodiment, or head 215 as shown in the second embodiment, and not the two dressers as required by each independent claim. Accordingly, none of the independent claims are anticipated by Berman, and accordingly, claims 20-50 are allowable over Berman.

Tanaka discloses a polishing machine including a dresser 30 having a plurality of dressing elements 30a, 30b, and 30c, for example as shown in Fig. 21. However, due to the arrangement of these dressing elements, they will be brought into contact with a polishing surface simultaneously and **not** at different times as required by each of the independent claims. Thus, none of the independent claims are anticipated by Tanaka, whereby claims 20-50 are allowable over Tanaka.

JP '618 discloses a polishing apparatus wherein surface roughness of grinding pad 3 is adjusted by diamond grinding wheels 4 and 5. However, these grinding wheels 4 and 5 are to be brought into contact with the grinding pad 3 simultaneously, and **not** at different times as required

by each of the independent claims. Thus, none of the independent claims are anticipated by JP '618, whereby claims 20-50 are allowable this reference.

Hayakawa et al., in Fig. 4, shows two dressers 15a and 15b. As described in column 8, lines 9-33, these dressers are brought into contact with polishing pad 2 simultaneously, and **not** at different times as required by each of the independent claims. Thus, none of the independent claims are anticipated by Hayakawa et al., whereby claims 20-50 are allowable over this reference.

Neither JP '504 nor WO '024 teach or suggest a polishing apparatus including at least two dressers which are to operate at different times, and accordingly, each of the independent claims are allowable over these two references either taken alone or in combination with any of the previously discussed four references.

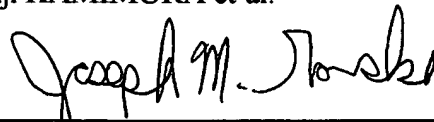
In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and an early Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicants' undersigned representative by telephone to resolve such issues.

Respectfully submitted,

Kenji KAMIMURA et al.

By: _____



Joseph M. Gorski
Registration No. 46,500
Attorney for Applicants

JMG/edg
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
August 7, 2003